SAFETY DATA SHEET

Benzoyl chloride pure

LANXESS Energizing Chemistry

00027707

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : Benzoyl chloride pure

Hazardous ingredients : benzoyl chloride [98-88-4]

REACH Substance Name : Benzoyl chloride

REACH Registration number : 01-2119487138-29-0001

1.2 Relevant identified uses of the substance or mixture and uses advised against

Suitable uses : Intermediate for use under strictly controlled conditions.

1.3 Details of the supplier of the safety data sheet

Supplier : LANXESS Deutschland GmbH, Industrial & Environmental Affairs
51369 Leverkusen, Germany, Telephone: +49 214 30 65109
E-mail: infosds@lanxess.com

1.4 Emergency telephone number : +49 214 30 99300 (Sicherheitszentrale CHEMPARK Leverkusen)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification : Acute Tox. 4, H302
Acute Tox. 4, H312
Acute Tox. 3, H331
Skin Corr. 1B, H314
Skin Sens. 1, H317

Classification according to Directive 67/548/EEC [DSD]

Classification : Xn; R20/21/22
C; R34
R43

Human health hazards : Harmful by inhalation, in contact with skin and if swallowed.
Causes burns. May cause sensitisation by skin contact.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

benzoyl chloride [98-88-4]

Hazard statements : H331 - Toxic if inhaled.
H302 + H312 - Harmful if swallowed or in contact with skin.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.

Additional warning phrases : Not applicable.

Precautionary statements

Prevention : Do not breathe vapour or spray. Wear protective gloves/clothing and eye/face protection.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention.

Storage : Not applicable.

Disposal : Not applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII : No.

Other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

Product definition (REACH) : Mono-constituent substance

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
benzoyl chloride	REACH #: 01-2119487138-29 EC: 202-710-8 CAS: 98-88-4 Index: 607-012-00-0	>99	Xn; R20/21/22 C; R34 R43 **See Section 16 for the full text of the R-phrases declared above.**	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 3, H331 Skin Corr. 1B, H314 Skin Sens. 1, H317 **See Section 16 for the full text of the H statements declared above.**	[A]

Occupational exposure limits, if available, are listed in Section 8.

Type

[A] Constituent
[B] Impurity
[C] Stabilising additive

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion : Get medical attention immediately. Wash out mouth with water. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Any skin coming into contact with product must be washed immediately with plenty of cold water and soap; washing with 3 % sodium bicarbonate solution would be more effective. Remove contaminated clothing and shoes. Get medical attention immediately.

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Basic aid, decontamination, symptomatic treatment. Treat with a corticoid metered aerosol depending on the amount inhaled. If appropriate symptoms occur or inhalation of large quantities is suspected, administer cortisone intravenously in addition Medical surveillance for at least 48 hours.

See Section 11 for more detailed information on health effects and symptoms.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous combustion products : Decomposition products may include the following materials:
carbon oxides
halogenated compounds

5.3 Advice for firefighters

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Never use water jet. Do not release runoff from fire to drains or watercourses.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8).

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate

respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. The product is registered with strictly controlled conditions as defined in Article 17(3) or 18(4) of regulation (EC) no. 1907/2006 (REACH Regulation) and must therefore be handled as such. Refer to the industry guidance prepared by Concawe/Cefic/ EFCG for advice on the confirmation of strictly controlled conditions.

7.2 Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Seveso II Directive - Reporting thresholds (in tonnes)

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
H2: Acute toxicity 2 any route of entry or Acute toxicity 3 Inhalation/Dermal route of entry	50	200

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

Remarks : Vent waste air only via suitable separators or scrubbers. Take precautionary measures against electrostatic discharges. Avoid all possible sources of ignition (spark or flame).

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Exposure limit values : Not available.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

8.2 Exposure controls

Risk management measures

Occupational exposure controls

Technical measures : Use only with adequate ventilation. The substance shall be rigorously contained by technical means during its whole lifecycle including manufacture, purification, cleaning and maintenance of equipment, sampling, analysis, loading and unloading of equipment or vessels, waste disposal or purification and storage. Procedural and control technologies shall be used that minimise emission and any resulting exposure. In cases of accident and where waste is generated, procedural and/or control technologies shall be used to minimise emissions and the resulting exposure during purification or cleaning and maintenance procedures.

Organisational measures : Only properly trained and authorised personnel shall handle the substance. In the case of cleaning and maintenance works, special procedures such as purging and washing shall be applied before the system is opened and entered.

Personal protection measures

Respiratory protection : If exposure cannot be ruled out, e.g. during product transfer, sampling or maintenance, a well-fitting respiratory mask conforming to standards or well-fitting respiratory device conforming to standards must be worn. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Full mask with type ABEK filter if product forms vapours

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if product contact cannot be excluded. After contamination with product change the gloves immediately and dispose of them according to relevant national and local regulations
Recommended: (< 1 hour) Polychloroprene - CR, Fluorinated rubber - FKM or Polyvinyl chloride - PVC

Eye protection : Safety eyewear complying with an approved standard should be used to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: Tightly fitting safety goggles.

Skin protection : Wear protective clothing. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Environmental exposure controls

Technical measures : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, special waste water treatment, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General information

Appearance

Physical state	:	Liquid.
Colour	:	colourless to yellow
Odour	:	Pungent smelling.

Important health, safety and environmental information

pH	:	2 [Conc. (% w/w): 0,01%]
Boiling point	:	197 °C (1013 hPa)
Melting point	:	-1°C (30,2°F)
Flash point	:	Closed cup: 93°C (199,4°F) [DIN 51758]
Explosion limits	:	Lower: 2,5% Upper: 27%
Vapour pressure	:	0,6 hPa (20°C)
Density	:	1,21 kg/L (20°C)
Efflux time	:	<15s (20°C) nozzle section: 4mm
Ignition temperature	:	600°C

9.2 Other information

Remarks	:	Decomposes in water.

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	:	The product is stable.
10.3 Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	:	To be protected from contaminants, e.g. non-noble metals, salts, water, alkalis, iron and its salts, alcohols.
10.5 Incompatible materials	:	Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Reactive or incompatible with the following materials: alkalis
10.6 Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Potential acute health effects

Inhalation	:	Toxic if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
Ingestion	:	Harmful if swallowed. May cause burns to mouth, throat and stomach.
Skin contact	:	Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.

Eye contact : Causes serious eye damage.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	Test
benzoyl chloride	LD50 - Oral	Rat	1900 mg/kg	-	-
benzoyl chloride	LD50 - Dermal	rabbit	790 mg/kg	-	-
benzoyl chloride	LC50 - Inhalation Vapour	Rat - Female	2 to 200 mg/l	4 hours	-
	LC50 - Inhalation Vapour	Rat - Male	1,45 mg/l	4 hours	-

Irritation/Corrosion

Skin : benzoyl chloride:Corrosive.

Eyes : benzoyl chloride:Corrosive.

Sensitiser

Skin : benzoyl chloride:sensitiser

Potential chronic health effects

Mutagenicity

Product/ingredient name	Test	Experiment	Result
benzoyl chloride	-	Experiment: In vivo Subject: Mammalian-Animal	Negative

Remarks : Inhalation of the fumes leads to irritation and burning of the respiratory tracts and lungs. Oedema of the lungs is possible, but may not appear until up to a few hours.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Test	Result	Species	Exposure
benzoyl chloride	-	Acute LC50 8,7 mg/l	Fish - Danio rerio	96 hours

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
benzoyl chloride	Fresh water <0,002 days	50%; 2.1 day(s)	Readily

Product/ingredient name	Rate of degradation/ elimination (%)	Period (days)	Test
benzoyl chloride	95 %	20 days	OECD 301D Ready Biodegradability - Closed Bottle Test

Conclusion/Summary : Not available.

Product/ingredient name	Rate of degradation/ elimination (%)	Period (days)	Test

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : No.

vPvB : Not available.

12.6 Other adverse effects

Other adverse effects : Not available.

AOX : The product contains organically bound halogens and can contribute to the AOX value in waste water.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : Examine possibilities for re-utilisation. Product residues and uncleaned empty containers should be packaged, sealed, labelled, and disposed of or recycled according to relevant national and local regulations. Where large quantities are concerned, consult the supplier. When uncleaned empty containers are passed on, the recipient must be warned of any possible hazard that may be caused by residues. For disposal within the EC, the appropriate code according to the European Waste List (EWL) should be used. It is among the tasks of the polluter to assign the waste to waste codes specific to industrial sectors and processes according to the European Waste List (EWL).

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1736	UN1736	UN1736	UN1736
14.2 UN proper shipping name	BENZOYL CHLORIDE	BENZOYL CHLORIDE	BENZOYL CHLORIDE	BENZOYL CHLORIDE
14.3 Transport hazard class(es)/ Marks				
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	No.	No.	No	No
14.6 Special precautions for user/Additional information	**Hazard identification number** 80	**Hazard identification number** 80	**Emergency schedules (EmS)** F-A, S-B	**Passenger aircraft** 851: 1 L **Cargo aircraft** 855: 30 L

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Hazard notes:

Corrosive.
Combustible.
Flash point (Closed cup): 93°C (DIN 51758)
Pungent smelling.
Keep separated from foodstuffs.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Seveso II Directive

This product is controlled under the Seveso II Directive.

Danger criteria

Category
H2: Acute toxicity 2 any route of entry or Acute toxicity 3 Inhalation/Dermal route of entry

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Abbreviations and acronyms :
ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number
vPvB = Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements :

H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H331	Toxic if inhaled.

Full text of R-phrases referred to in sections 2 and 3 : R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R34- Causes burns.
R43- May cause sensitisation by skin contact.

Remarks : The product is registered with strictly controlled conditions as defined in Article 17(3) or 18(4) of regulation (EC) no. 1907/2006 (REACH Regulation) and must therefore be handeled as such.

History

Date of issue : **2013-01-18**

Date of previous issue : **2012-01-02**

Version : **4**

Indicates information that has changed from previously issued version.

Notice to reader

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet and its Annex [if required according to Regulation (EC) 1907/2006 (REACh)] is to describe the products in terms of their safety requirements. The given details do not imply any guarantee concerning the composition, properties or performance.